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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,904	12/10/2003	Masayuki Kobayashi	461-154	5165

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EXAMINER	
DOUGHERTY, THOMAS M	
ART UNIT	**PAPER NUMBER**
2834	

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	10/730,904	KOBAYASHI ET AL.	
	Examin r	Art Unit	
	Thomas M. Dougherty	2834	

-- The MAILING DATE of this c mmunication appears n the cover she t with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-30* is/are pending in the application.

4a) Of the above claim(s) *20-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9 and 12-15* is/are rejected.

7)☒ Claim(s) *10,11 and 16-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1203*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 9 is rejected under 35 U.S.C. 102(b) as being anticipated by Katsura et al. (US 2002/0008159). Katsura et al. show (figs. 3, 13B) a piezoelectric device for an injector built in an injector and generating driving force of said injector, characterized in that: said piezoelectric device (61) is fabricated by alternately laminating a plurality of piezoelectric layers (61) expanding and contracting in proportion to an applied voltage and a plurality of internal electrode layers (622) for supplying the applied voltage; the sectional shape of said piezoelectric device crossing at right angles the laminating direction is an octagon or a polygon with a larger number of sides than octagon; and said piezoelectric device is accommodated in a cylindrical accommodation space (11).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsura et al.(US 2002/0008159). Given the invention of Katsura et al. they do not note

specific dimensions of their device. They do note however an insulating film (63) but not its dimensions. Katsura et al. also do not show a value R2 - R1, where R1 is a maximum outer diameter of said piezoelectric device inclusive of said insulating member and R2 is an inner diameter of said circular cylindrical accommodation space, is 0.5 mm or below.

It would have been obvious to one having ordinary skill in the art to dimension the components in the device of Katsura et al. at the time their invention was made to have at least two side surface flat portions having a width of 2.5 mm or more disposed on a side surface parallel to said laminating direction, and to have an insulating film having a thickness of 0.002 to 0.5 mm is formed at least on the surface of a side surface parallel to the laminating direction, and to have the R2-R1 relationship claimed, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205, USPQ 215 (CCPA 1980).

To select dimensions in this instance is not regarded as a matter of invention. Katsura et al. show the claimed structural components, these components are obviously made to fit in the injector. The applicants likewise are simply fitting their components. Whether Katsura's et al. components are sized to fit like the applicants or not, the applicants are clearly following the example of Katsura et al. to so fit the components.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katsura et al.(US 2002/0008159) in view of Li (US 6,577,044). Given the invention of Katsura et al. as noted above, they don't note the specific insulating film material that they employ.

Li notes an insulating film made of any of a silicone resin, a polyimide resin, an

epoxy resin and a fluorocarbon resin in his piezoelectric device. See claim 13.

It would have been obvious to one having ordinary skill in the art to employ the insulating film material of Li in the device of Katsura et al. at the time their invention was made because Li's material has well known properties and thus to consider such, can be matched to use by these properties.

Additionally, the applicants themselves present a list of optional materials, it would have been obvious to one having ordinary skill in the art to employ one or the other of these materials, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended sue as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Allowable Subject Matter

Claims 10, 11 and 16-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to show or fairly suggest a length and arc length limitation wherein a proximity ratio expressed by (B/A) x 100%, where A is a length of the whole circumference of a circumscribed circle of the piezoelectric device and B is the sum of length of below between said circumscribed circle and said piezoelectric device is larger than 17% or where it is 32% or more.

Further not shown nor suggested in the prior art are electrode take-out portions electrically connected to the internal electrode layers disposed on a distal end face and/or a rear end face of the piezoelectric device in the laminating direction.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The remaining prior art cited shows or notes octagonal shaped piezoelectric electric elements and stack casings.

Direct inquiry concerning this action to Examiner Dougherty at (571) 272-2022.

tmd

June 3, 2004

THOMAS M. DOUGHERTY
PRIMARY EXAMINER
GROUP 2809